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THE EVOLUTION OF THE OPERATING TABLE.

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THE EVOLUTION OF THE OPERATING TABLE.

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Being especially interested in the question of modern hospital equipment in general, and of surgical tables in particular, the author endeavored to trace the evolution of the latter element of the *armamentarium chirurgicum* from the beginning of recorded medical history to the present time. The results of this effort are given below.

No attempt has been made to cover the entire field of surgical literature in the endeavor to trace the evolution of the operating table, as that is manifestly too difficult an undertaking. It is, therefore, not maintained that a complete sequence of steps in this development is given herein. It may be interesting, however, and not entirely without profit, for those of us who are fortunate enough to work with all the modern paraphernalia, to glance back through the years and see under what disadvantages our surgical forefathers labored.

The various stages in the evolution of the surgical table may be roughly tabulated as follows:

1. The early period when household tables, beds, chairs, etc., or plain wooden tables made for the purpose, were used for operations. This brings us to the early years of the nineteenth century.

2. The first half of the nineteenth century, when more or less crude attempts were made to construct special operating tables, always of wood, and of course with no view to asepsis, then unknown.

3. The twenty-five or thirty years of the second half of the nineteenth century, or the period just antedating the era of antiseptic surgery. During this time the chief objects seemed to be "elegance of appearance," durability, inexpensiveness, and

universal use. Then, and even later, very little distinction was made between examination tables and strictly surgical or operating tables. There developed also, at this time, the so called operating chairs, which were the progenitors of the modern adjustable tables. Wood was still the material almost exclusively used, although a few attempts at making iron tables are noted.

4. From the early eighties to the present time, or the era of aseptic surgery, and of modern hospital construction and equipment, when drainage,

FIG. 1.—Table used in 1741.

universal adaptability, simplicity of mechanism, and the requirements of asepsis were the objects in view.

I.

In studying the early history of medicine it is interesting to note that major operations, including laparotomies, were performed long before the dawn of the Christian era. The instruments used by the surgeons of olden times have been fairly well preserved in the archives, but it is quite different with reference to the operating table, and other operating room facilities. While operations are described,

and instruments portrayed, no attention seems to have been given to the matter of surgical tables. We read where the patient was put upon the table, where he was held by strong attendants, but we are not enlightened as to the nature of the table.

Presumably, then, the early surgeons made no special provision in this regard, using whatever table was most available for the operation about to be performed. Nor do the early books consulted concerning the construction and equipment of

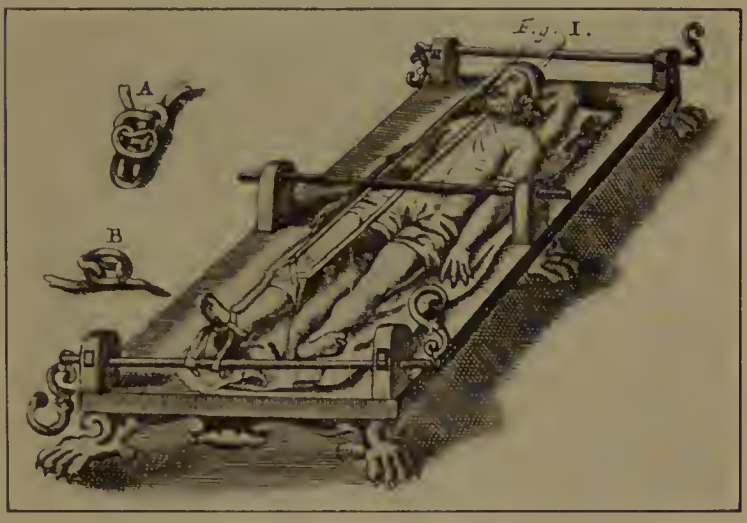

FIG. 2.—Extension apparatus, sometimes used for operations, 1741

hospitals give any more information on this subject. Indeed, more recent books of this nature are very little more enlightening in this regard.

Oppert, in *Hospitals, Infirmaries, and Dispensaries: Their Construction, Interior Arrangements, and Management, etc.*, published in 1867 (first edition in 1865), mentions the operating table in only two of a large number of hospitals described, situated in various countries throughout the civilized world.

Ambroise Paré, to whom it is generally customary to attribute every advance in medicine and surgery

which cannot otherwise be accounted for, did not seem, unfortunately, to initiate the evolution of the operating table. In his celebrated work on surgery, an English translation of which appeared in 1634, there is no evidence of any advance in this direction. There is shown, however, a lithotomy operation in progress, the patient being placed upon a wooden table of ordinary household type.

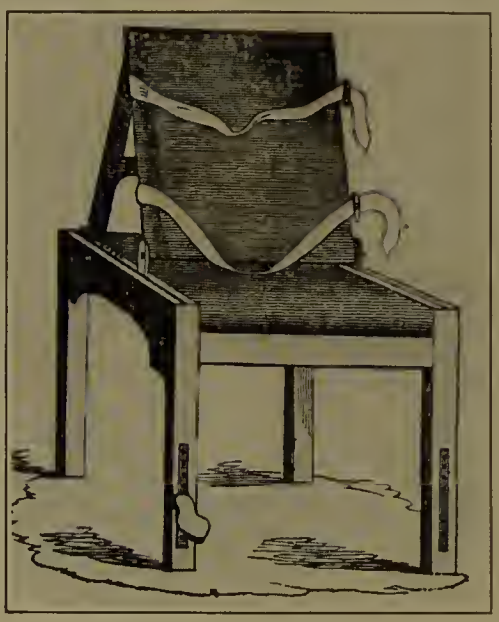

FIG. 3.—Averill table, 1829.

Nearly two hundred years later (1741) Joannis Scultetius, in his *Armamentarium chirurgicum*, gives a most interesting portrayal, in picture form, of instruments and operations of the time. Fig. 1 shows the character of the table reproduced by him. In another illustration a laparotomy is in progress, the patient being placed upon an ordinary bed of the period. Extension tables for the treatment of fractures, etc., similar to that shown in Fig. 2, reproduced from the same book, were also used for surgical purposes.

So far as can be ascertained, no advance was made from this time until the beginning of the eighteenth century.

II.

The earliest table found in the review of the literature of the second period is represented in Figs. 3 and 4, reproduced from the *London Medical Gazette,* v, p. 52, 1829.

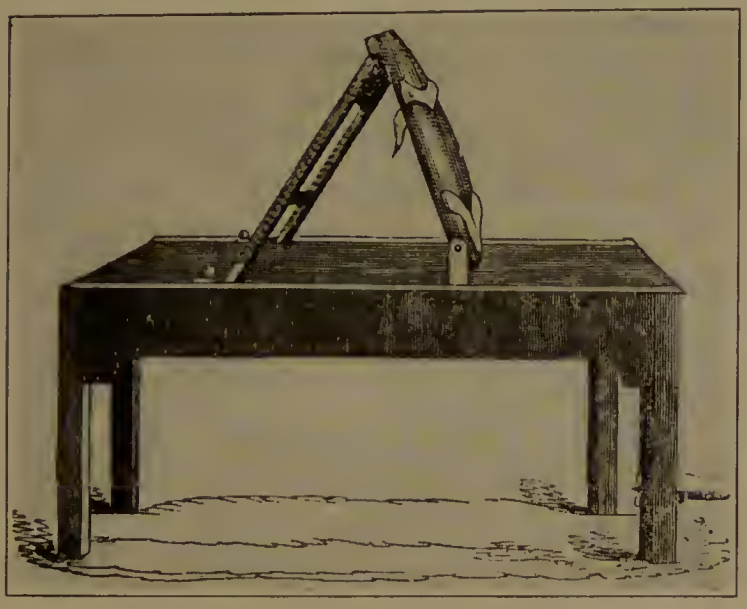

FIG. 4.—Averill table, another view.

This table, which was recommended by Sir Astley Cooper, and which was in use at the Cheltenham Casualty Hospital at that time, was devised by Charles Averill, surgeon to that institution, who described it in the journal mentioned.

In the description of the table Averill says: "Whoever has witnessed the frequent performance of surgical operations, either in this country or on the continent, must often have seen, in protracted cases, the inconvenience to which the surgeon has been subjected, and the delay that has been caused

by the assistant, from fatigue, becoming unable to afford requisite support to the patient, behind whom he may have been placed; and a change has, therefore, become necessary. Not only this, but every spectator must also have seen the exhausted state of a patient increased by the close contact with the body of others placed by the surgeon to officiate as assistants. Thus, in case of amputation, in many of our public hospitals, I have often witnessed one assistant sitting behind the patient as a support, a second placed to hold or keep steady the healthy limb, a third and fourth to hold the arms, and a fifth

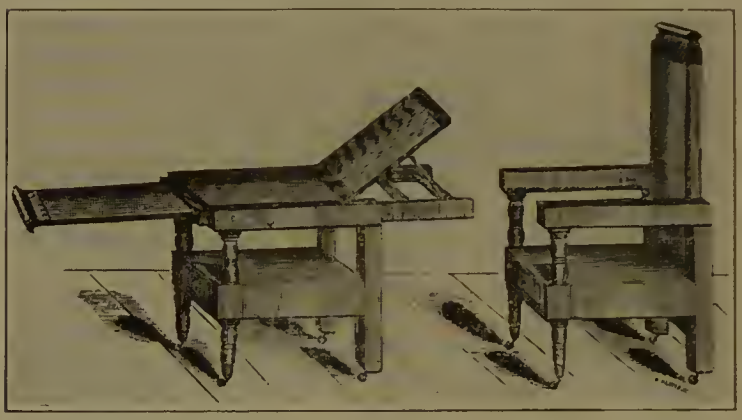

FIG. 5.—Ayres table, in use at Long Island College Hospital in 1858.

to support the diseased member about to be removed; thus frequently increasing that exhaustion which it is not in their power to relieve."

Proceeding, he says: "Now although it is not intended, in the description of this operating table, to paint it as possessing any of the comforts of a down bed, still I am sure it will be found to answer the purpose better than any I have ever yet seen: and that it will prove also more calculated, from its construction, to mitigate the suffering of those who are obliged to seek relief under the knife of the surgeon, than those tables in general use."

Search through a number of journals and books

on surgery of an earlier date than Averill's description, failed to reveal any portrayal of "those tables in general use" at the time. They were presumably plain wooden tables with flat tops, such as one sees in the older pictures.

A *Description of an Operating Table* was published, in 1834, in a Russian medical journal. No pictures of this table, which was devised by L. Koehler, were given, but the description shows that other countries were beginning to recognize the

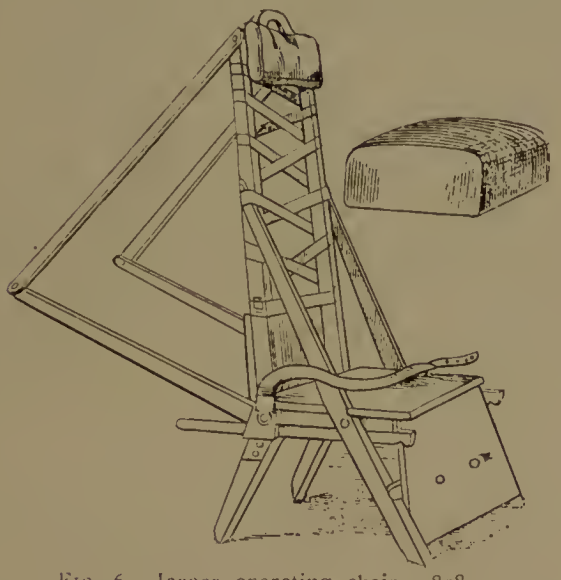

Fig. 6.—Jaeger operating chair, 1858.

need for a table especially constructed for surgical purposes.

III.

America joined in this rather tardy progressive movement during the next period, and in 1858 the table shown in Fig. 5 was in use in the Long Island College Hospital. This "strong evidence of the scientific diligence of the medical gentlemen connected with that new institution," was given editorial notice in the *American Medical Gazette*, New York, ix, p. 241, 1858. The editor, who had re-

cently paid a visit to his friends of that institution, was so impressed with the table that he described it and published the picture, from which the accompanying cut was taken. This "most ingeniously constructed operating table," was designed by Dr. Daniel Ayres, who was then one of the attending surgeons to the hospital. "As the table is the most simple, practicable, and compendious one we have as yet seen," says the editor, "and as it commends itself to the notice of every surgeon, for ordinary office use, we have procured for our readers a woodcut that will give an idea of its mechanical ar-

FIG. 7.—Jaeger operating chair, another view.

rangement. We understand that the expense of Doctor Ayres's operating table, executed in black walnut, does not exceed twenty-five dollars, and that, on account of its utility and cheapness, some of the medical practitioners of Brooklyn have already introduced it into their offices."

There appeared also, in 1858, the interesting looking affair shown in Figs. 6 and 7, which is reproduced from *Oesterreichische Zeitschrift für praktische Heilkunde*, iv, p. 877, Wien, 1858. This operating chair was devised by Doctor Jaeger, with especial reference to operations upon the head, though it could be used for operations upon any portion of the upper part of the body.

In 1860, the *Maryland and Virginia Medical Journal* published a picture, reproduced in Fig. 8, and a description of an Operating Chair for Surgical and Obstetrical Operations and Vaginal Examinations, devised by Dr. C. Johnston. "The chair recommends itself," says the editor, "by reason of its convenience, its simplicity, small size, and price." It was sold in "walnut stuffed with hair, at a cost of $19."

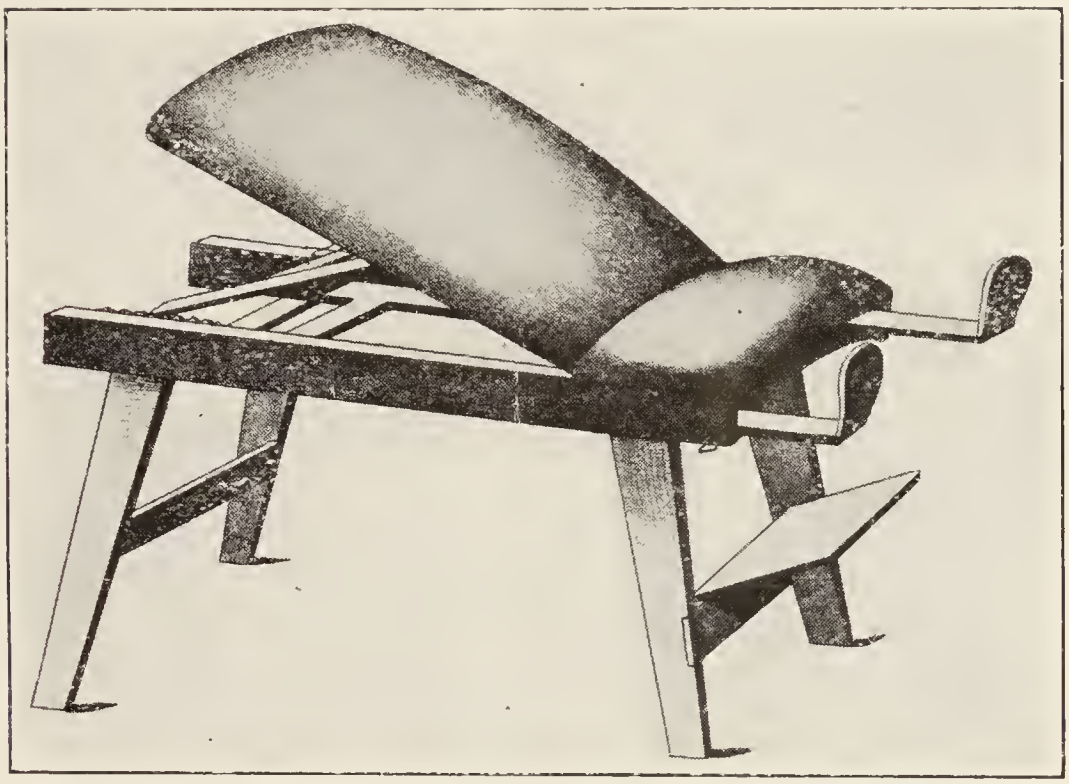

FIG. 8.—Johnston operating chair, 1860.

Oppert, in the work cited above, mentions the Bradford Infirmary, at Bradford, England, as having "a patent operating table," but gives no information concerning its construction. The same author speaks of the Bradford Eye and Ear Infirmary, which was opened in 1857, and which had an operating table fitted with "Graefe's contrivance for fixing the head between two padded boards, by means of screws, on the principle of a book or card press." (*Opere citato*, p. 93.)

Portable operating tables were made as early as 1870, as shown by a description of one devised by

E. Souchon, and described in the *New Orleans Journal of Medicine*, xxiii, p. 293, 1870.

In 1873, a "parlor and operating table" appeared in the *Allgemeine Wiener medizinische Zeitung*, the product of the creative genius of one Chwat, of Poland. This "elegant table," by a simple mechanism, could be converted into an operating table, and when its duty in this capacity was temporarily at an end it could be immediately metamorphosed again into the article of drawing room furniture.

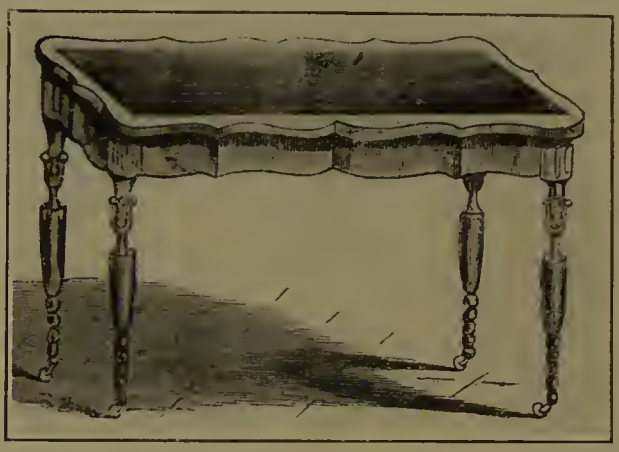

FIG. 9.—"Parlor operating table," 1873, as used for parlor table.

This interesting contribution to the list of operating tables is shown in Figs. 9, 10, and 11.

During the same year, 1873, there appeared in the *Berliner klinische Wochenschrift*, x, p. 438, a table, reproduced in Fig. 12, which is evidently constructed of iron, and which is the first of this character encountered in the literature consulted. No descriptive matter accompanied this table.

Coming back to America, we find the table reproduced in Fig. 13, from the *Western Lancet*, San Francisco, iii, p. 381, 1874. This was called Our Universal Operating Table, and was designed by Dr. A. B. Stout. It is said of this table, "The

American Medical Association, which convened here some three years since, expressed almost unanimously its approbation of it, whether for use in the office or lecture room."

In 1878, Retslag published in the *Berliner klinische Wochenschrift,* xv, p. 368, a description of his collapsible, transportable, iron frame, operating table, which is shown in Fig. 14. The iron frame was bronzed, and the cushion was covered with brown leather, so called American leather, which,

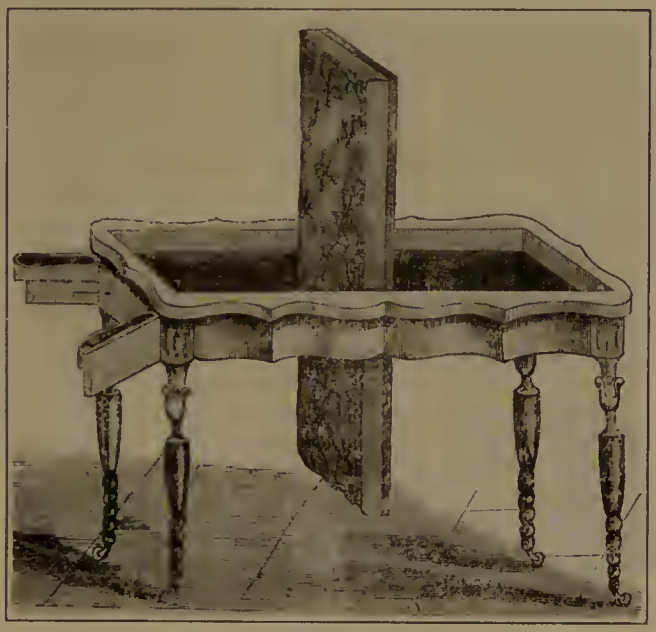

FIG. 10.—"Parlor operating table," showing reversible top.

according to the inventor, could be easily cleansed of blood and pus.

Annandale, of the Edinburgh Royal Infirmary, had a table made for that institution, which was then new, in 1879, description of which appeared in the *Lancet*, in 1880.

Another table of this period is reproduced (Figs. 15, 16) merely because it is one of a type of tables largely in vogue at that time, and even later.

This table, devised by Dr. Frank P. Foster, and called *A Combined Gynæcological Table and Instrument Case,* was described and illustrated in the *Medical Record,* xv, p. 501, 1879.

Various other tables of similar character appeared about this time, some of which were constructed for the specific purpose of supplanting the "speculum chair." While such tables were designed primarily for examination purposes, they were also used for operative work.

Such a table was that designed by the late William H. Byford, sometime Professor of Gynæcology,

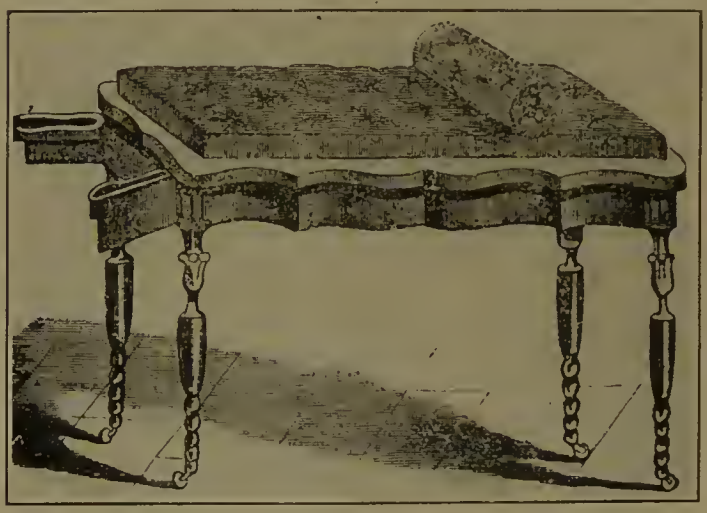

Fig. 11.—"Parlor operating table," ready for operation.

Rush Medical College. (Byford's Gynæcological Table—*Chicago Medical Review,* ii, p. 422, 1880-81), Fig. 17. The feature which, at the time, gave to this table a decided advantage over every other table then in use, consisted in "a very ingenious modification of the lateral inclination of Thomas, so as to do away with the disadvantage of the patient lying, so to speak, on a side hill, which gives the sensation of a tendency to roll from the table."

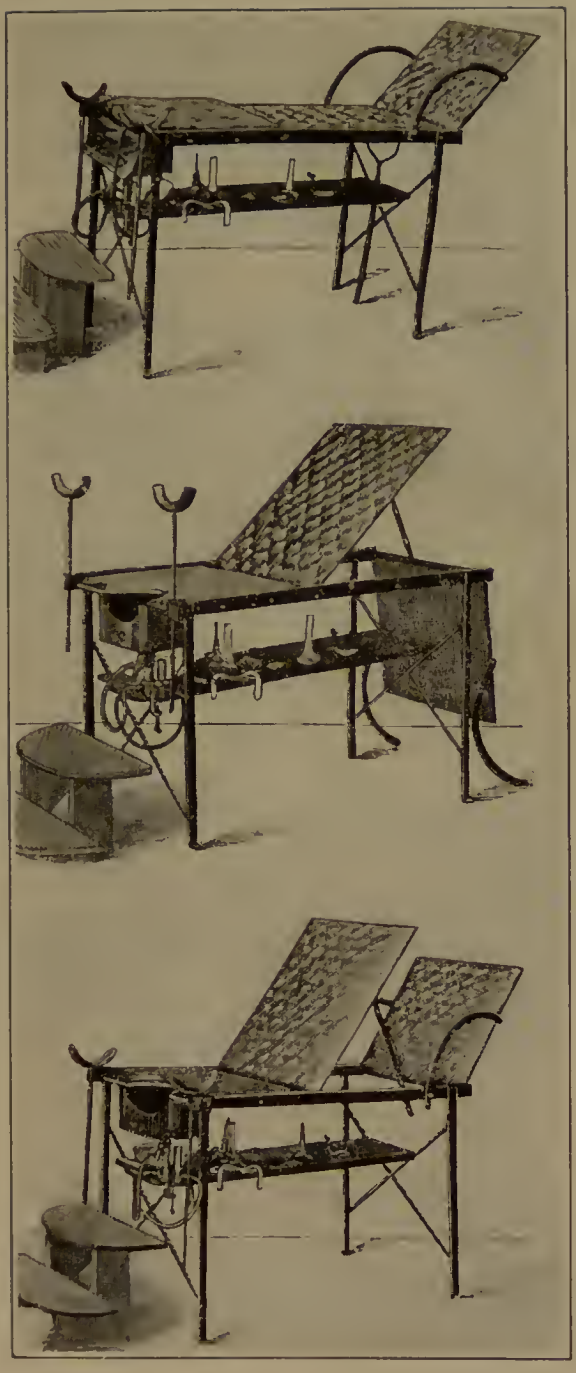

FIG. 12.—Three views of iron frame table, 1873.

Although intended as a gynæcological table, it could be used for general operations.

While a few sporadic attempts were made to construct an operating table of iron, wood was still almost universally employed when this period of the evolution of the operating table ended.

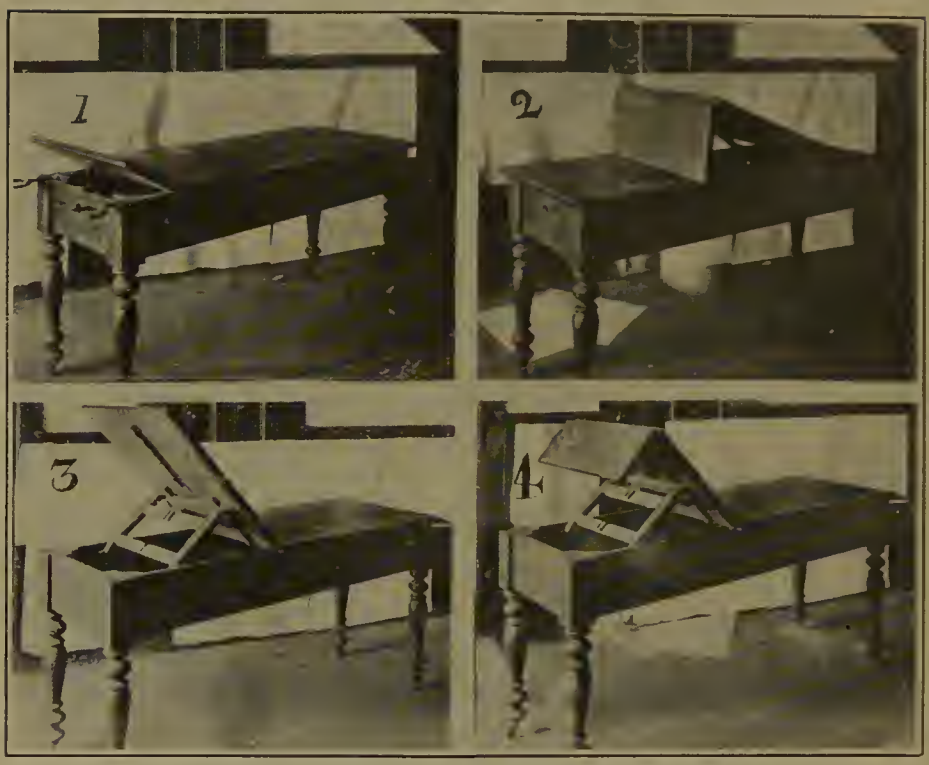

FIG. 13.—"Our universal operating table." 1874.

IV.

We come now to the period of the real development of the operating table—1880 to the present time. It is by no means to be inferred, however, that this development would have been so rapid, so scientific, and so satisfactory in its results, if it had not been preceded by the general awakening to the

need for some specially constructed table for surgical purposes. Even after the promulgation of the principles of antisepsis, however, wood continued to be largely used, with the result that many of the tables were similar in general idea to the rather cumbersome products of the preceding years.

An illustration of this is seen in A New Operating Table, designed by Franklin H. Martin, of Chicago (*Chicago Medical Journal and Examiner*, xlvii, p. 34, 1884). This "combined office bed and gynæcological and general operating table,"

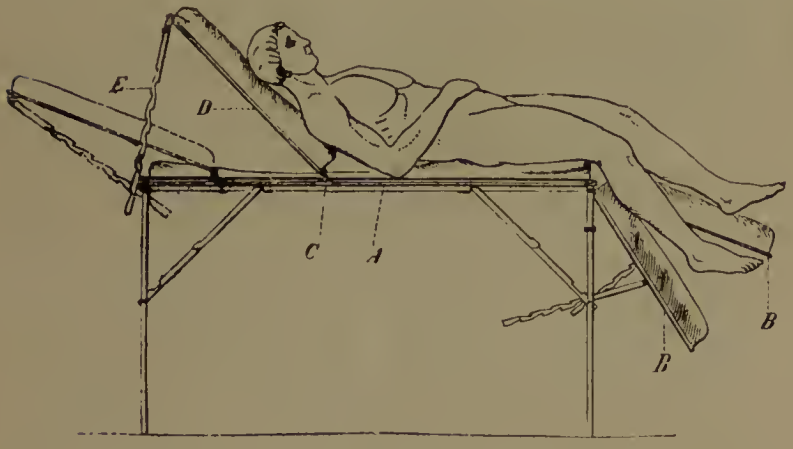

FIG. 14.—Retslag collapsible, transportable, iron frame table, 1878.

was considered by the inventor to be "the successful combination of numerous valuable ideas into one compact piece of office furniture." Figs. 18 and 19 show different views of the table.

One of the best known and most widely modified tables of the early part of this period was that of Julliard, described in *Illustrirte Monatsschrift der ärztlichen Polytechnik*, Bern, v, p. 267, 1883, and reproduced in Fig. 20. It was made of oak and had a perforated zinc top, through which the fluids drained into a zinc trough or receptacle underneath. It consisted of a main table and a smaller table, the latter to be utilized as needed for operations

upon the arm. It has been variously modified, the small table feature forming a part of a number of tables at that time.

One of the first modifications of the Julliard table was that of O. Sprengel, published in the *Centralblatt für Chirurgie,* xi, p. 489, Leipzig, 1884. The drainage mechanism was slightly modified, and the table was adjustable at the head and foot by means of a small board. It was made of wood, which Sprengel considered better than other materials.

FIG. 15.—Foster combined gynæcological table and instrument case. 1879.

In 1887 Wicher (*Illustrirte Monatsschrift der ärztlichen Polytechnik,* p. 1691) described a table which is said to be the forerunner of the Hagedorn table.

Perhaps the most important contribution to the evolution of the operating table up to this time was that of Hagedorn, described in the *Centralblatt für Chirurgie,* xiv, p. 513, Leipzig, 1887, and illustrated in Fig. 21, central drainage being one of its chief features. It was made of wood, the top being a wooden plate, divided into two halves, each slightly inclined toward the centre, and so placed as to

leave a gutter between. Through this gutter the fluids passed to a porcelain pail below. The entire table was painted with oil paint, the two plates of the top being covered with black rubber sheeting. The adjustable head support consisted of strong varnished sheet iron, lined with rubber and felt.

The advantages claimed for this table were: Extreme simplicity; drainage of all fluids; convenience of cleaning; trustworthy disinfection. The

FIG. 16.—Another view of Foster table.

objection raised to this table was that on account of the angular position of the plates, the patient obstructed the access of the fluids to the gutter, and was, therefore, always soaked at the back.

Hagedorn's table called forth a number of modifications, one of the most notable of which was that of Franke and Franke, described in the *Centralblatt für Chirurgie,* xiv, p. 609, 1887. It was made of wood, with a strong tin central groove or gutter, into which the fluids drained. This gutter could be slipped out and cleansed.

Landau's laparotomy table, described by Abel in the *Centralblatt für Gynäkologie,* xlviii, 1887, was made of iron and was easily disinfected.

During this same year, 1887, the Pennsylvania Hospital was using a table described in Fig. 22, reproduced from the *Medical News,* l, p. 706, Philadelphia, 1887. This was described by T. S. K. Morton, by whom it was devised, having been selected as one of a type of tables with a central pedestal. It was made of "suitable hard wood."

In 1888 F. Dumont (*Illustrirte Monatsschrift der ärztlichen Polytechnik,* Bern, x, p. 271) de-

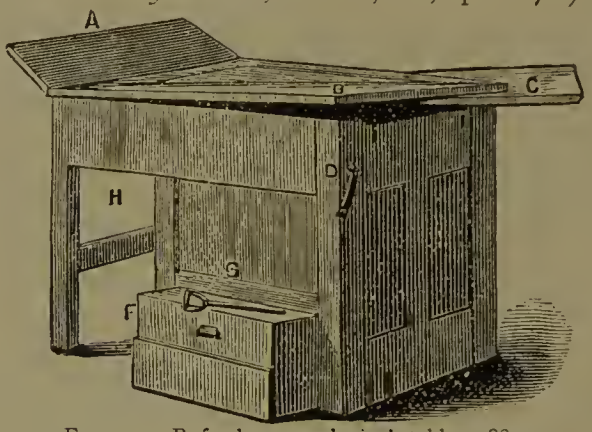

Fig. 17.—Byford gynæcological table, 1880.

scribed a "heatable antiseptic table," a modification of Julliard's table. The wooden frame of Julliard's was replaced in the Dumont (or Kocher-Dumont. as it is properly called) by an iron frame. The perforated zinc top with the receptacle underneath was replaced by a trough surrounded by gutters which conducted the fluids to the centre of the trough, and from here through a drainage tube into a bucket below. It was so arranged that hot water could be let in and out as desired.

Perhaps the most notable advance made during the early years of this period was the introduction of the glass top operating table. So far as we have been able to ascertain, the credit for this is due to

A. Reverdin. This table, which was in use in the clinic of the Doctors Reverdin, was described in the *Revue de chirurgie*, viii, p. 592, Paris, 1888, from which the accompanying illustration, Fig. 23, is taken. The frame was made of wood, and the top of thick plate glass, with beveled edge. The top projected over the frame, and to facilitate drainage a brass gutter passed all around under the glass plate. The gutter was slightly inclined toward the inferior end, where it was connected with a rubber tube leading to a receptacle on the

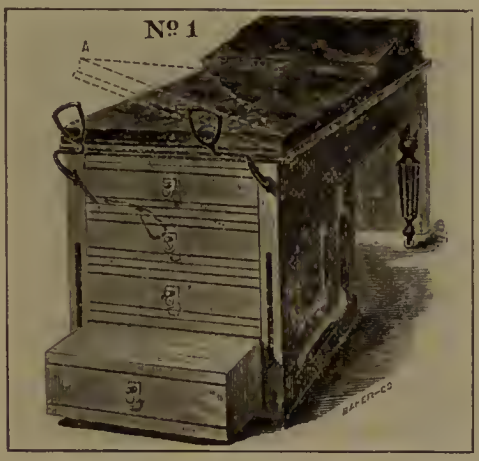

FIG. 18.—Martin operating table, 1883.

floor. The mountings were of nickeled steel. The table was easily cleansed, heavy, but made in sections so that it could be readily transported.

A number of tables similar in construction followed that of Reverdin, among the best of which seemed to be those of Laguaite (*Gazette des hôpitaux de Paris*, lxii, p. 1133, 1889) and Poncet (*Revue de chirurgie*, Paris, August, 1889).

By means of various devices the majority of the tables of this period aimed at a greater or less degree of universality of usage, and consequently of free adjustability. With the advocacy of Trendelenburg, of the so called Trendelenburg position,

table construction centred around this one point Naturally, the first to present a table for facilitating this position was Trendelenburg himself. According to him, a table should be so constructed that it can be placed in any position. It should have very few straps and buckles, be adjustable to different levels and sizes, and so constructed as to be rotated from side to side. His table answered these requirements. The patient sat down upon it as in an ordinary chair. By means of two shoulder pieces, support was given to the entire body when

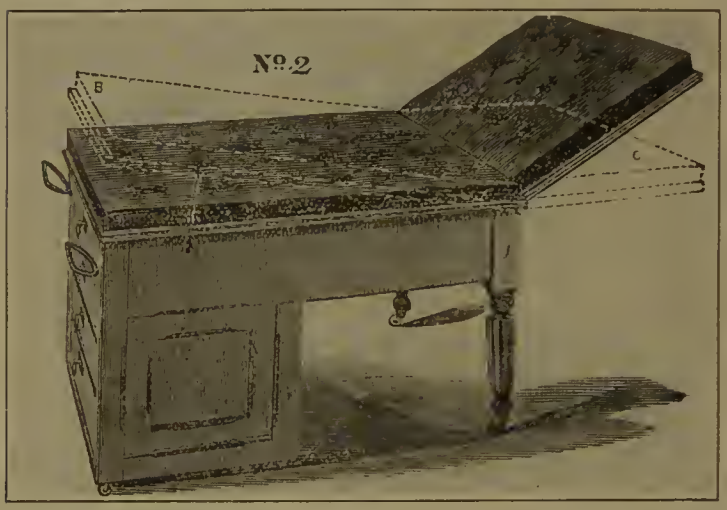

FIG. 19.—Another view of Martin operating table.

the table was elevated, and the feet were strapped fast. By means of a screw, the entire table could be elevated so as to give the desired position. This table was presented by Trendelenburg before the German Surgical Society (*Verhandlungen der deutschen Gesellschaft für Chirurgie,* xix, p. 53, Berlin, 1890), and described by Willy Meyer, in the *Medical Record* for December 13, 1890, p. 658. Fig. 24 is reproduced from a photograph which Dr. Meyer was kind enough to allow us to have taken of his Trendelenburg table.

Among the first modifications of operating tables having for their purpose the facilitating of the Trendelenburg position, made in this country, was that designed by Dr. William H. Halsted, then associated with the New York Hospital. This consisted of a shallow trough about twenty-four inches wide, seventy-two inches long, and eight inches deep, set on four heavy posts, across which was placed, lengthwise, a board for general surgery.

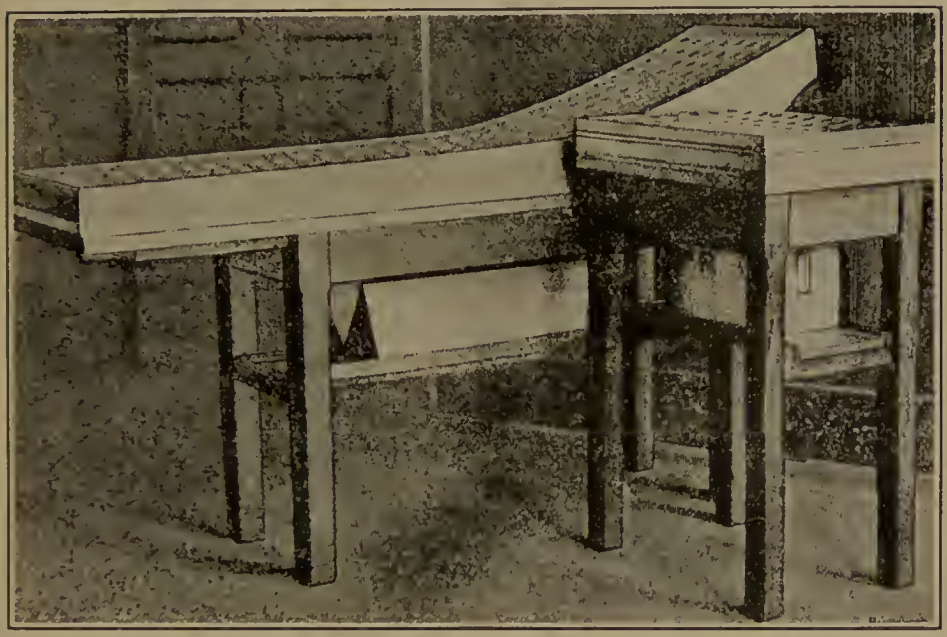

FIG. 20.—Julliard table, 1883.

When it was desired to obtain the Trendelenburg position, this board was set down in the trough, while the further end was supported on a sawhorse. This table was in use in the New York Hospital many years after Doctor Halsted associated himself with Johns Hopkins Hospital, Baltimore.

At a later date (1900) this general design was carried out for both of these institutions by the Kny-Scheerer Company, metal and glass being employed

in the construction. Instead of the glass top being raised at one end, as in the original model, an independent attachment was provided when the Trendelenburg position was required. In this, as in all the early so called adjustable tables, the patient's shoulders rested on the flat of the table, giving an enforced bend at the neck, which had to be relieved by means of a sand bag.

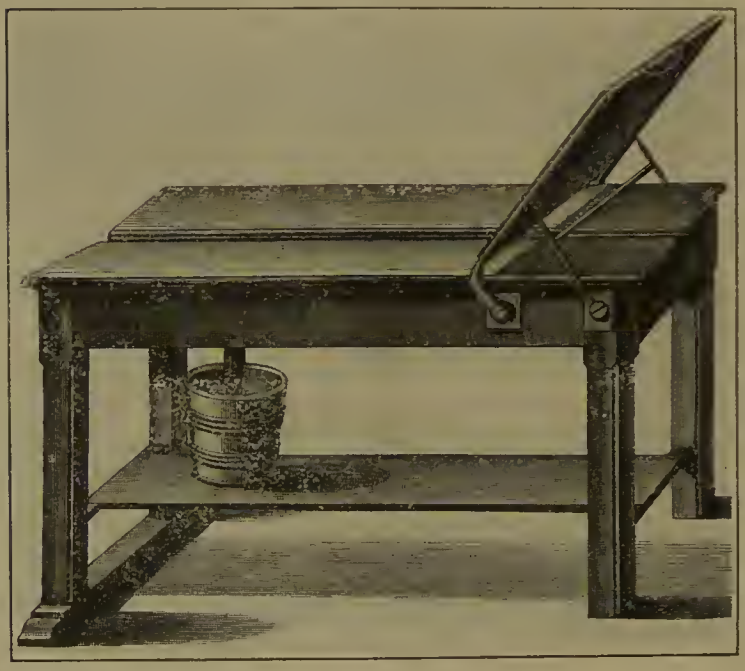

Fig. 21.—Hagedorn table, 1887.

In 1891 the late Dr. George Edebohls, of New York (*Medical Record*, xl, p. 598, 1891), described a table which he had constructed, the frame of which was made of iron pipe, joined together with ordinary trailing fittings about four feet six inches long. One half of the top was permanently covered with glass, and the other half was adjustable to the Trendelenburg position. Finding this model too short, Dr. Robert T. Morris, of New York,

modified it by an attachment for the Trendelenburg position, by means of which the table could be made sixty-six inches long.

Dr. Clement Cleveland (*New York Journal of Gynæcology and Obstetrics,* ii, p. 814, 1892) designed a table with the top mounted on the apex of a triangle, with which the Trendelenburg posture was easily obtainable. It was also arranged to flex the recti and psoas muscles, a feature still in use in some of the later modifications of the adjustable table.

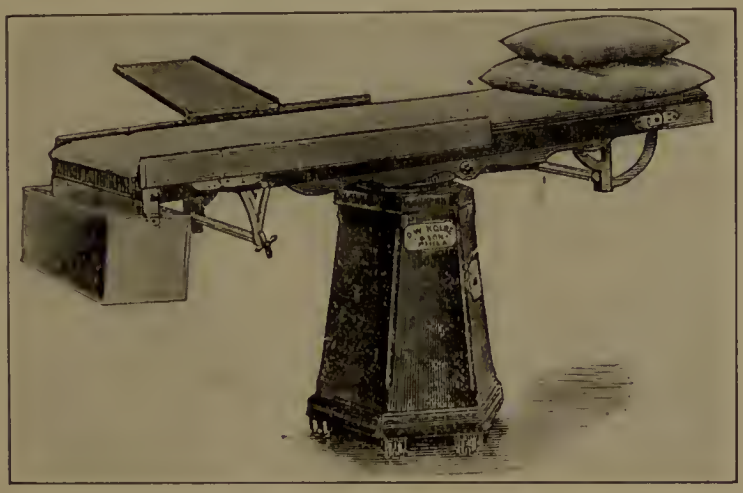

FIG. 22.—Pennsylvania Hospital table, 1887.

Dr. Francis Foerster, of New York City (*New York Medical Journal,* liv, p. 527, 1891), devised an iron frame portable operating table. This consisted of steel slats across the top, attached to four folding iron legs. This was later modified by Dr. Herman Boldt, of New York, who devised a double top frame, so arranged that one end could be elevated by means of a rack and pinion movement, controlled by an ordinary hand crank.

Doctor Boldt's success with this table doubtless inspired him to have constructed his stationary operating table, which gives the fundamental principle

upon which the construction of almost all modern operating tables is based. The top of this table is made in three sections, swinging in a stationary base. The foot end of the table is dropped when used in plastic work, and the head end can be placed above or below the horizontal plane, the head portion moving automatically when the central section is inclined for the Trendelenburg position. Shoulder supports are provided to secure the patient and relieve the strain at the bended knees.

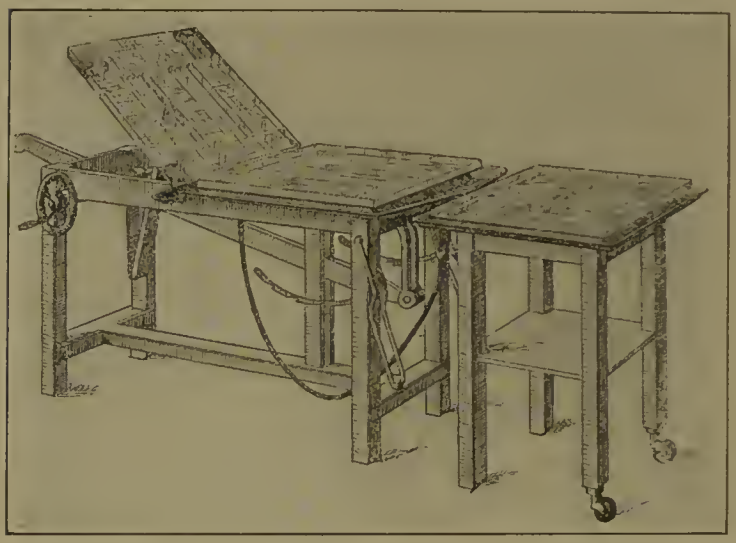

Fig. 23.—Reverdin glass top table, 1888.

The crank handle used to elevate the top of the table was so placed as to inconvenience the surgeon if he desired any slight alteration in the position of the patient, and to obviate this, Dr. H. B. Delatour, of Brooklyn, devised a side wheel, operating on a shaft and controlled by the anæsthetist, to adjust the table to any desired position.

The Boldt-Delatour table was later modified by Dr. Francis Markoe, for his own use at St. Luke's Hospital, New York. The Markoe table was so constructed as to be inclined toward the foot end,

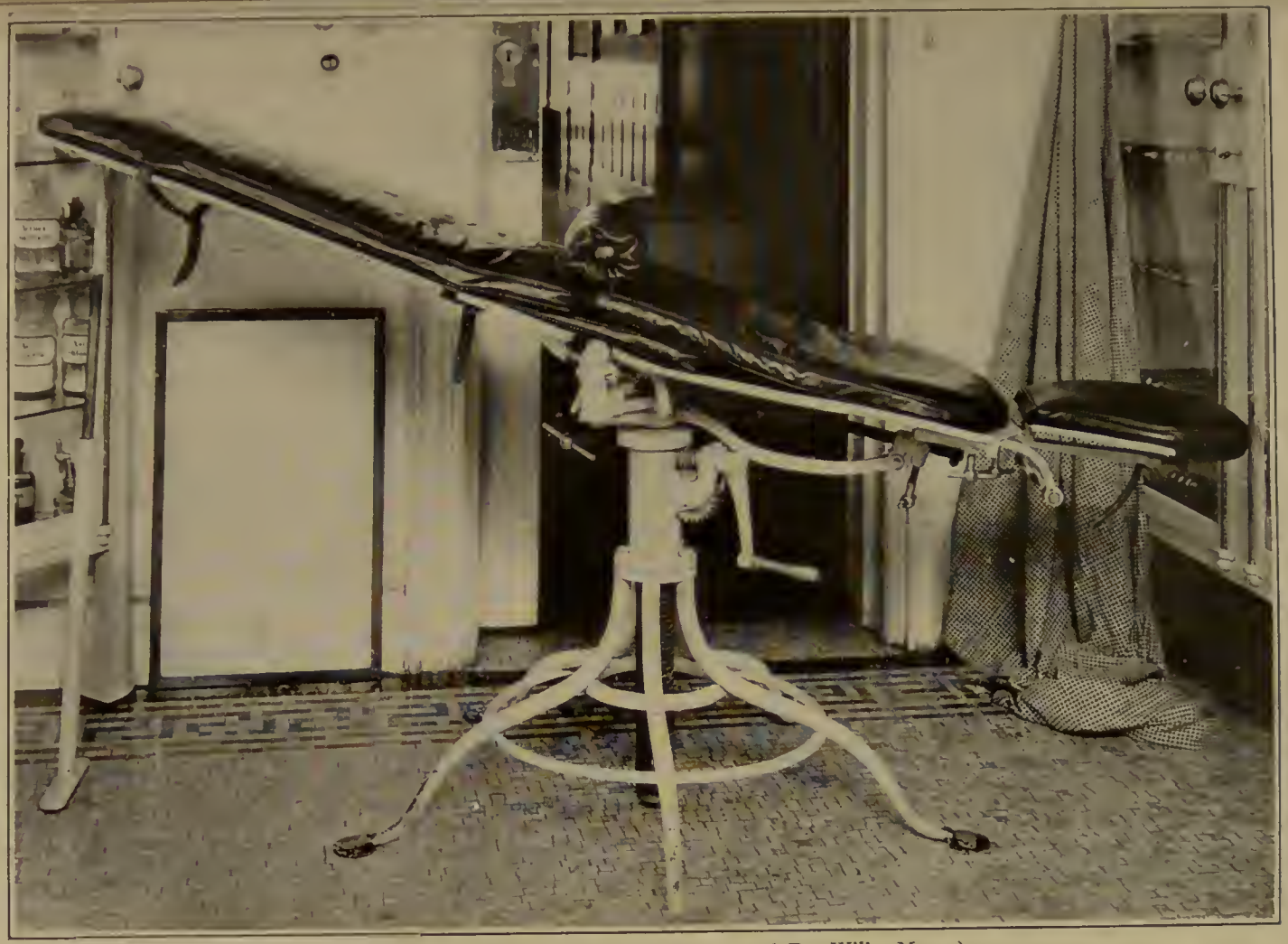

FIG. 24.—Trendelenberg table, 1890 (by courtesy of Dr. Willy Meyer).

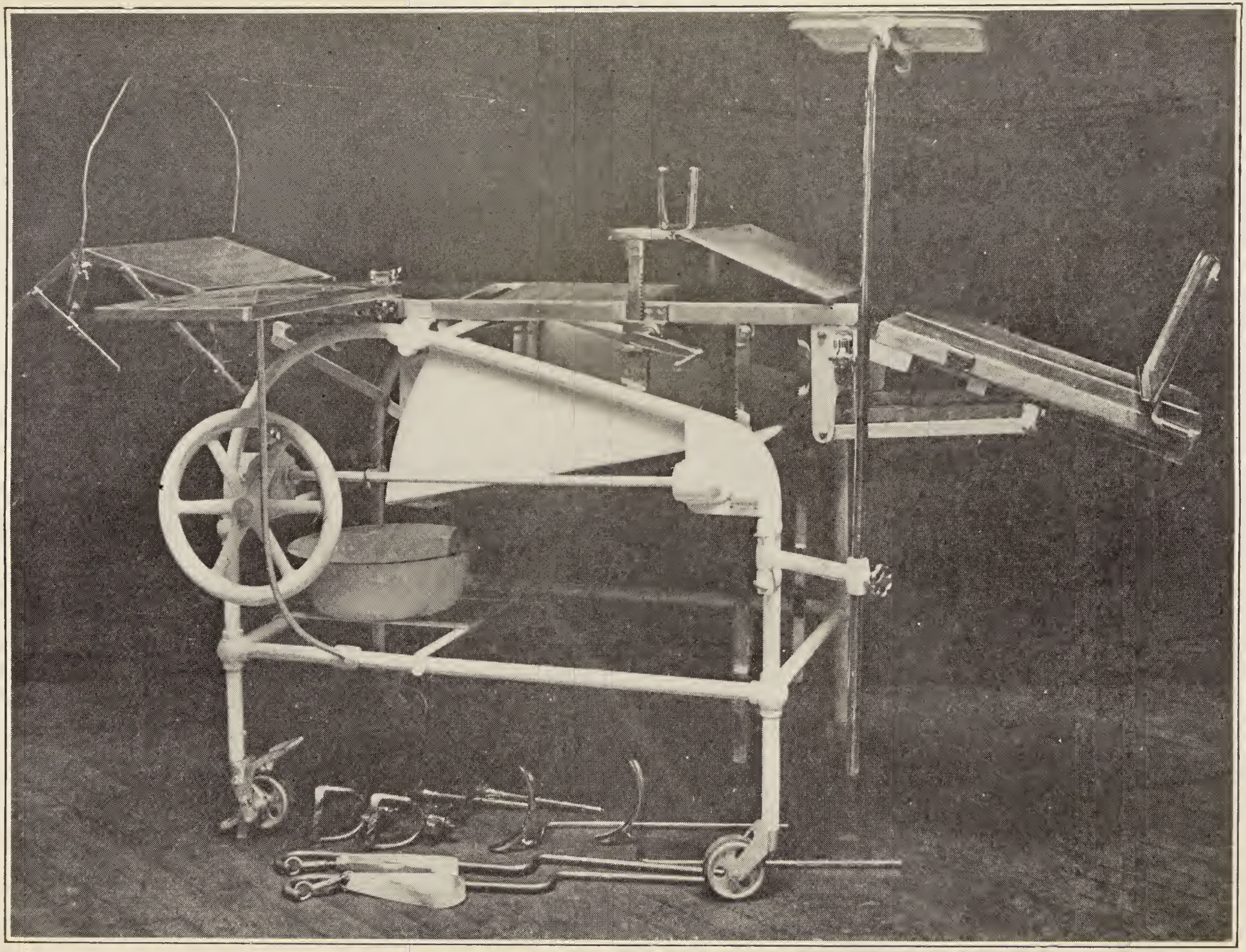

FIG. 25.—Bainbridge table, showing various attachments: Anæsthetist's screen; foot brakes; arm extension; leg holders; perineal instru-

as well as to be elevated for the Trendelenburg position.

The author has used different ones of the more recent models of the tables mentioned, and has found them in the main satisfactory. He has endeavored, however, to contribute another step in the evolution of the operating table by devising one with various modifications, adaptations, and additions, with what seem to be certain improvements. The Kny-Scheerer Company have been most untiring in their cooperation and the author's table as portrayed here is made by them.

Recognizing the fact that plate glass always presents a cold surface, unless specially warmed, a nickel top, which quickly takes the temperature of the room and will not chill the patient, is adopted. Furthermore, it will not break as will glass, nor stain like baked enamel, nor chip like porcelain enameled iron. This metal also acts as a good conductor of electricity, and serves as a contact base for the use of electrical currents, such as fulguration.

For general surgery the table may be extended. The foot end is divided into two sections, which greatly facilitates operating upon either of the lower extremities, one leaf being dropped out of the way while the other is being used.

To care for the patient's arm more properly during amputation of the breast, there is a side extension, ten inches wide, twenty inches long, attached at right angles to the table, thus obviating the necessity of a nurse or other attendant holding the arm extended.

For pelvic work, the foot end is made to drop well back, affording the operator a closer position than heretofore obtainable, and permitting the use of a weighted speculum. There is also an instrument tray, with raised edges to prevent instruments rolling off.

To keep the patient from slipping backward when

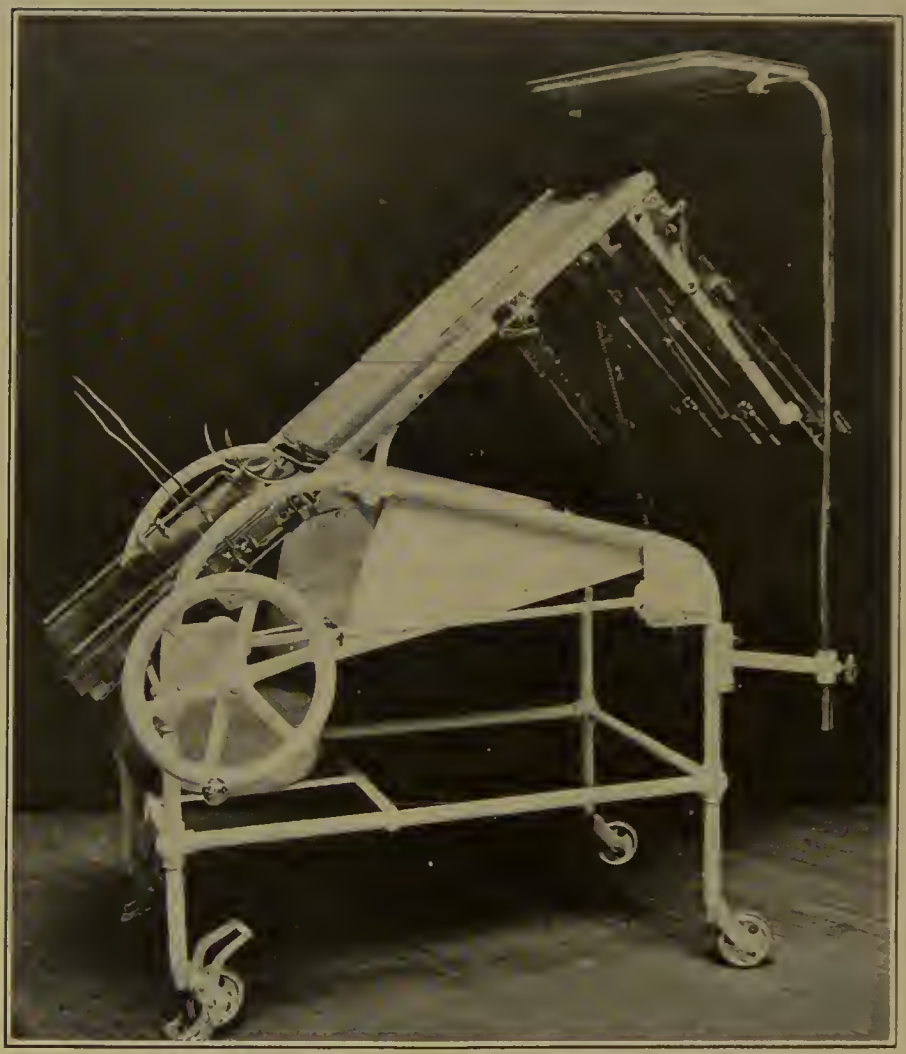

FIG. 26.—Bainbridge table, showing swinging rack for instrument tray; foot brakes applied; table raised at foot end.

the hips are elevated, the table is provided with especially long rods to the shoulder supports.

An acute Trendelenburg position is obtainable, the table being supported by milled tool steel bars, which guarantee great strength. The adjustment of the table with the patient on it is done by the anæsthetist without any interference to the operator.

The foot end of the table may be adjusted to any angle to relieve the strain at the bend of the knee, while the patient is supported at the shoulders by broad flat circular braces, adjustable to accommodate patients of any size. The head end of the table may be raised independently if desired, and has attached to it a heavy copper bow for a screen to protect the field of operation.

The swinging rack on a long bracket holds a tray, made detachable so that it may be prepared with the necesary instruments and set on the rack after the patient is placed on the table. Foot brakes are applied so as to raise the table from the wheels at the head end, securing the table firmly; they may be easily released. These are operated by the anæsthetist, are arranged so as not to damage the rubber tire; neither do they interfere with the turning of the wheels.

The top of the table can be inclined at the foot end for the Fowler-Hartley position, and is especially desirable for operations for goitre. A foot rest is provided to support the patient, and in order to elevate the shoulders and permit the head to be more properly tilted backward, the goitre attachment of Dr. J. S. Brown, of Montclair, N. J., so modified that it may be used to lengthen the table, is employed. It is also provided with sockets for holding the anæsthetist's screen.

For operations on the kidneys and gallbladder, the Lilienthal elevating bridge is used with the Cunningham posts to support the patient. A trailer is added to prevent the sagging of the hips, which has been found especially desirable. The end of

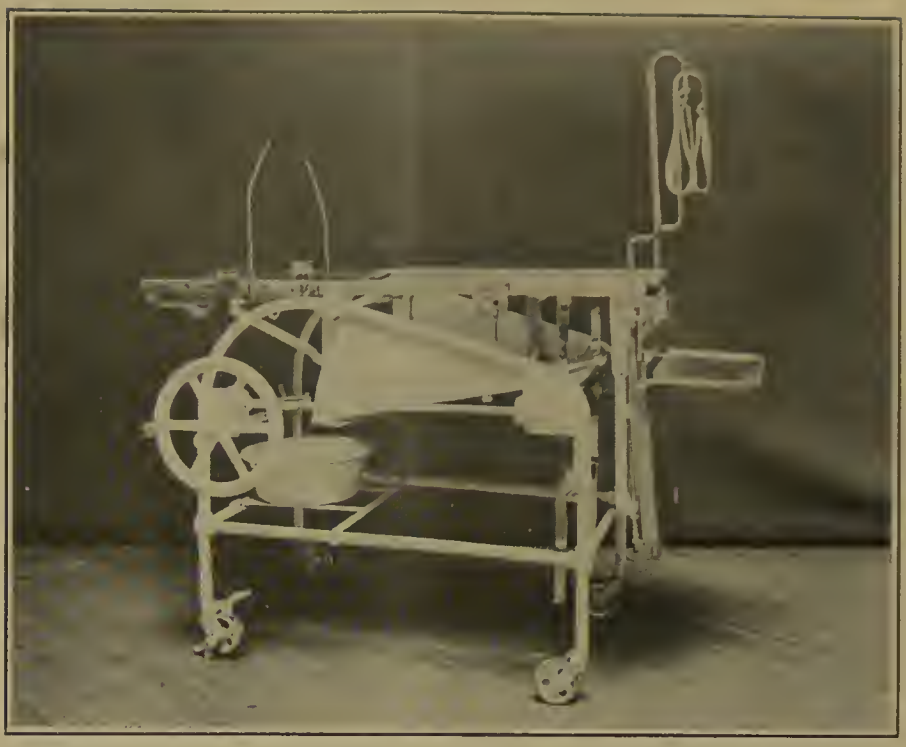

FIG. 27.—Bainbridge table, showing foot end dropped well back for pelvic work, instrument tray in position.

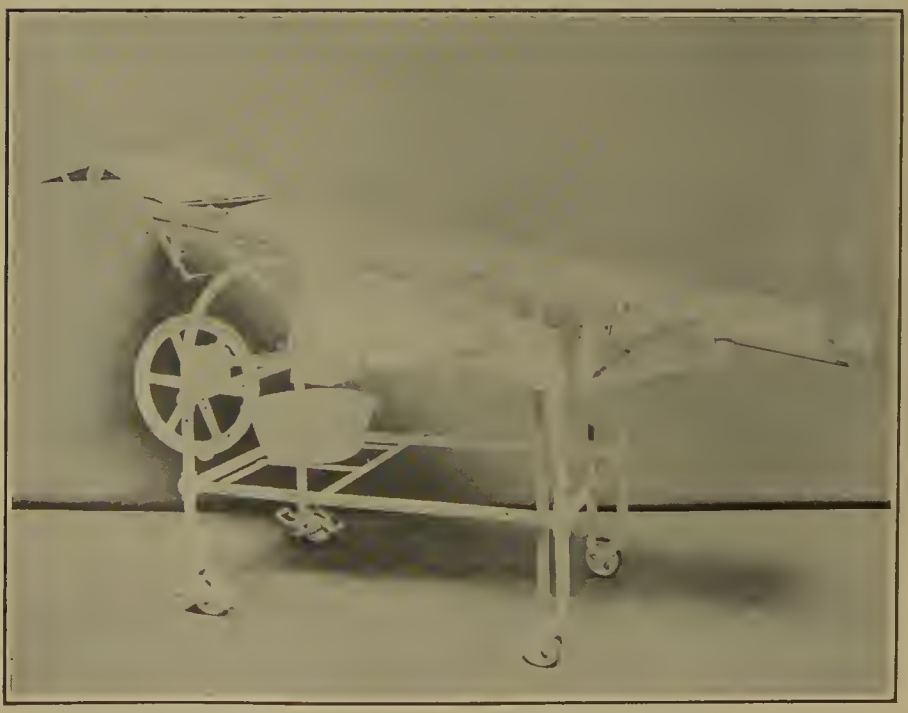

FIG. 28.—Bainbridge table, foot brake released, partly reversed Trendelenburg position with tray used to support feet during goitre work.

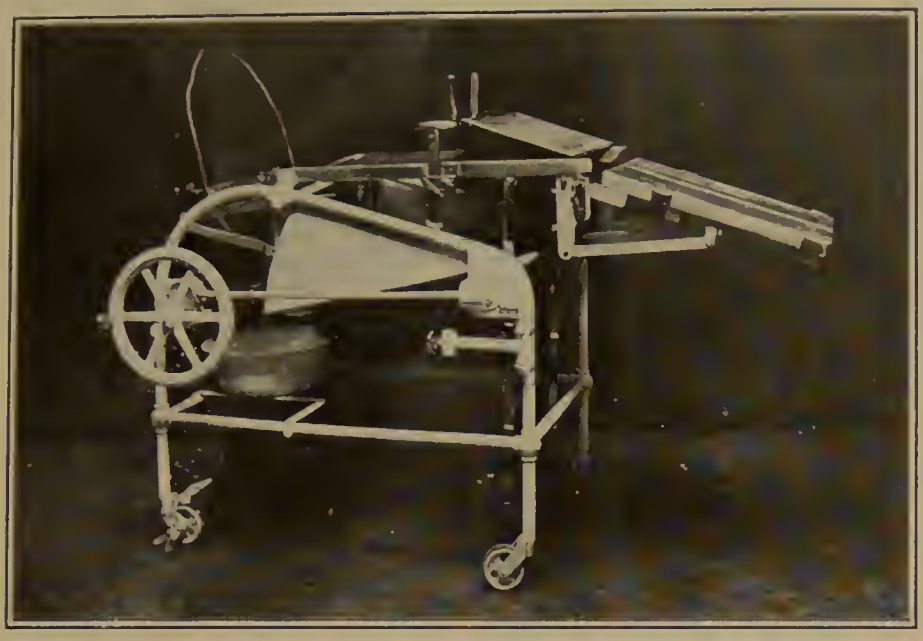

FIG. 29.—Bainbridge table, in position for kidney and gallbladder work, showing the Lilienthal elevating bridge, with the Cunningham posts to support the patient.

FIG. 30.—Bainbridge table, showing Sachs's head rest.

the table can be adjusted so as to place the patient without any strain.

In Fig. 25 is shown the author's operating table with its various attachments—the anæsthetist's screen, foot brakes, side extensions for the arm, leg holders, perineal instrument tray, swinging instrument rack with detachable tray, shoulder supports, foot supporting plate, goître attachment, elevating bridge with hip and heel stirrups. Another view is shown in Fig. 26.

Dr. Ernest Sachs's latest design of headrest for operations upon the head, is conveniently used with the Bainbridge table. The top plates of this rest are varied and interchangeable. There are, also, shoulder supports for raising the patient's chest, thus obviating interference with respiration.

Figures 27, 28, 29, and 30 represent other views of the Bainbridge table.

It is not maintained that the Bainbridge table presents the end of the evolution of the operating table, or that it is altogether superior to others now in use. But it does serve a wide variety of purposes, is easy of adjustment, conforms to the most rigid principles of modern surgical technique and asepsis, and has certain features, which, in the experience of the author, seem to meet some special demands better than anything yet devised. It is therefore presented as one of the last steps in the evolution of the operating table, pending other and still more complete mechanical devices.

ADDITIONAL DATA.*

In the NEW YORK MEDICAL JOURNAL for November 4, 1911, pp. 909-918, I endeavored to trace the evolution of the operating table from the earliest times to the present. For purposes of convenience of description the development was divided into arbitrary epochs or stages, the more important steps within each stage being given.

For purely historical reasons more space was given to the earlier stages, and to the earlier steps within the last stage, than to the more modern expressions of table development. For the same reason more illustrations of these older tables, now forgotten or soon to be forgotten, were reproduced than of the more recent tables, with which surgeons are more or less familiar.

As a consequence of this antiquarian feature many excellent modern tables were omitted from the list with descriptions and illustrations. A number of those which were mentioned, but not pictured, may be said to mark distinctive steps, and, had space permitted, would have been given. Conspicuous among these is the Boldt table, mentioned in my communication on page 916, one view of which is given herewith in Fig. 31. This table, which was devised in 1896, is often referred to as the progenitor of practically all later American general operating tables, having a sectional top swinging in a stationary frame to facilitate the Trendelenburg posture without a bend at the neck.

In the effort to keep the article within reasonable limits, clarity was apparently sacrificed to brevity in the description of my own table, with which my article ended, as may be judged from an article which appeared in the JOURNAL for December 23, 1911, p. 1276.

*These "additional data," which appeared in the NEW YORK MEDICAL JOURNAL for January 13, 1912, were called for by an article entitled Concerning the Evolution of the Operating Table, by Dr. Frank Hartley and Dr. Francis W. Murray, published in the NEW YORK MEDICAL JOURNAL for December 23, 1911.

In the article mentioned, Doctor Hartley and Doctor Murray say that I described a table (meaning my own) which is "identical" with one devised by them over six years ago, and that, with the exception of the Brown's goitre attachment, they are unable to find among the modifications, adaptations, and additions a single one which was not part of their table in 1908.

The description of my table must have been deplorably incomplete, or else my esteemed colleagues must have read my article in a superficial and careless manner, quite out of harmony with their accustomed scientific accuracy. It is hardly conceivable that they took the trouble to examine my table, or they would have noted at least a sufficient number of differences to have eliminated from their minds the thought of identity between the "Bainbridge table" and the "Hartley-Murray table," as the latter is described in the article cited above.

In reviewing the subject of operating tables, I confined myself entirely to the usual channels of medical and surgical literature, not having recourse, naturally, to the voluminous catalogue literature of manufacturing establishments. However, the fact that "a description of it has never appeared in any medical journal" would not have deterred me from mentioning the Hartley-Murray table, with which I have been familiar since its first appearance, had it impressed me as being sufficiently distinctive to warrant its being so chronicled. In the second paragraph of my original article I distinctly stated that no attempt had been made to cover the entire field of medical and surgical literature in the endeavor to trace the evolution of the operating table, and that it was not maintained that a complete sequence of steps in this development was given.

Inasmuch as Doctor Hartley and Doctor Murray have raised the issue of identity, I have accepted the courtesy of the JOURNAL for the purpose of

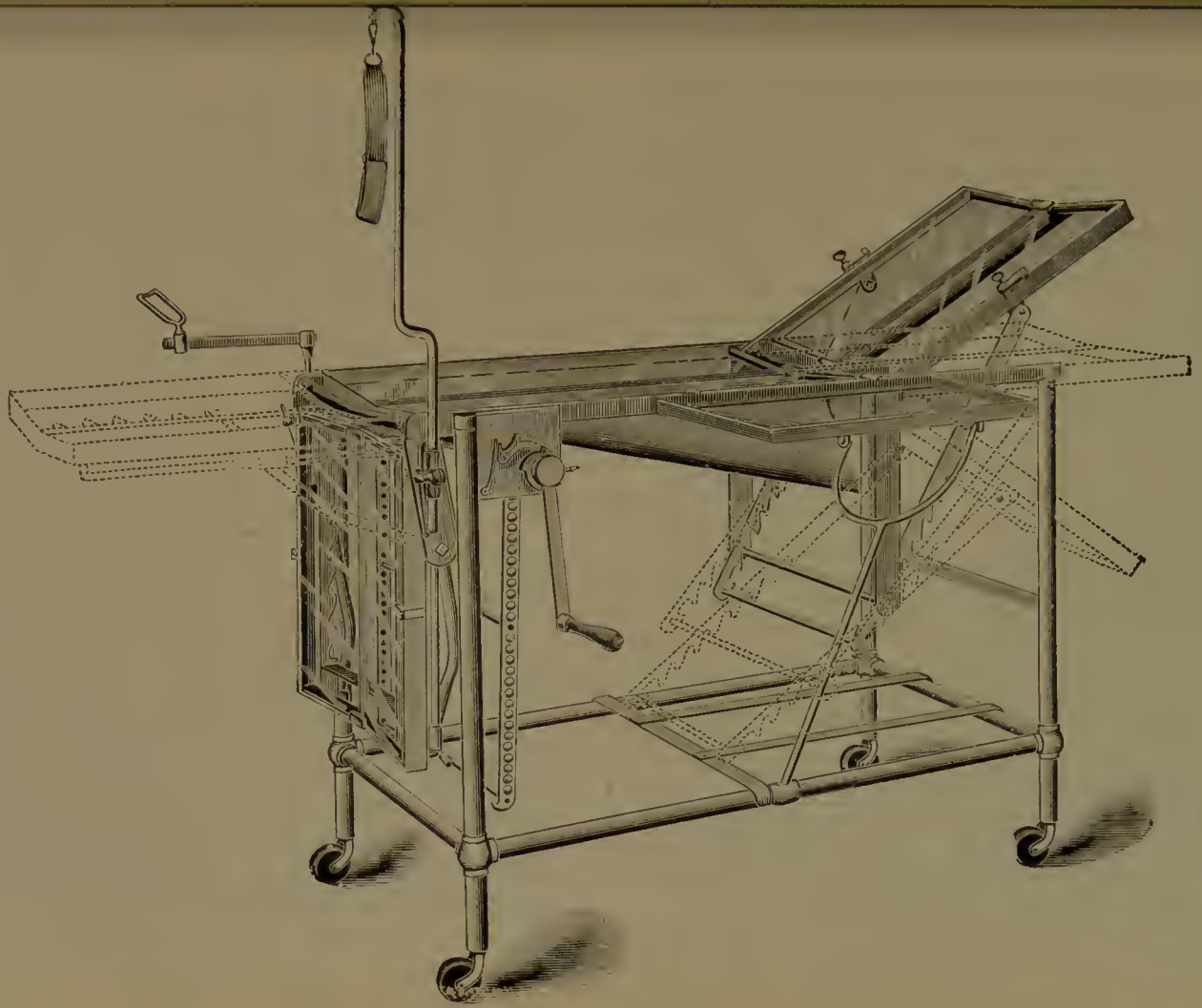

FIG. 1.—Boldt's original stationary table.

epitomizing the specific differences between the two tables, and for the reproduction of two additional views of my table, which may help to emphasize these points of variance. It is not with the desire of precipitating a controversy—certainly not a "claim to priority" dispute—that this is done.

The following features of my table, some of which are surgical and some mechanical, do not appear in the Hartley-Murray table, as described by them in the article cited: 1. The divided foot end; 2, the side arm extension, attached by one of its short sides, for holding the arm at right angles during amputation of the breast; 3, the wider range of adjustment of the shoulder rests to prevent the patient from slipping back when in the lithotomy position; 4, the double attachment for the swinging instrument tray to either side of the table; 5, the more rigid straight bars for elevating the table instead of the long curved ones; 6, the foot brakes to lift the wheels from the floor instead of clamping the rubber tire; 7, the attachments of the etherizer's screen to both the operating table and the goitre attachment; 8, the modification of the foot rest by turning up its edges to make it serve as a perineal instrument tray; 9, the drainage outlet at the extreme head of the table when in the Trendelenburg position; 10, the complete tubular frame, eliminating the square metal and giving a gain in strength and freedom from the chipping of enamel; 11, the removable kidney elevating bridge, which leaves a smooth, unimpeded top, as shown in Fig. 2; 12, the metal top, and the adoption of this as a conductor of electricity.

The importance of the differences mentioned may be a matter of individual opinion. To me, and to many others who have either examined or used my table, they are not inconsequent, but are sufficient to give to the table an identity of its own. There is virtually nothing within the range of surgery as it is now practised which cannot be com-

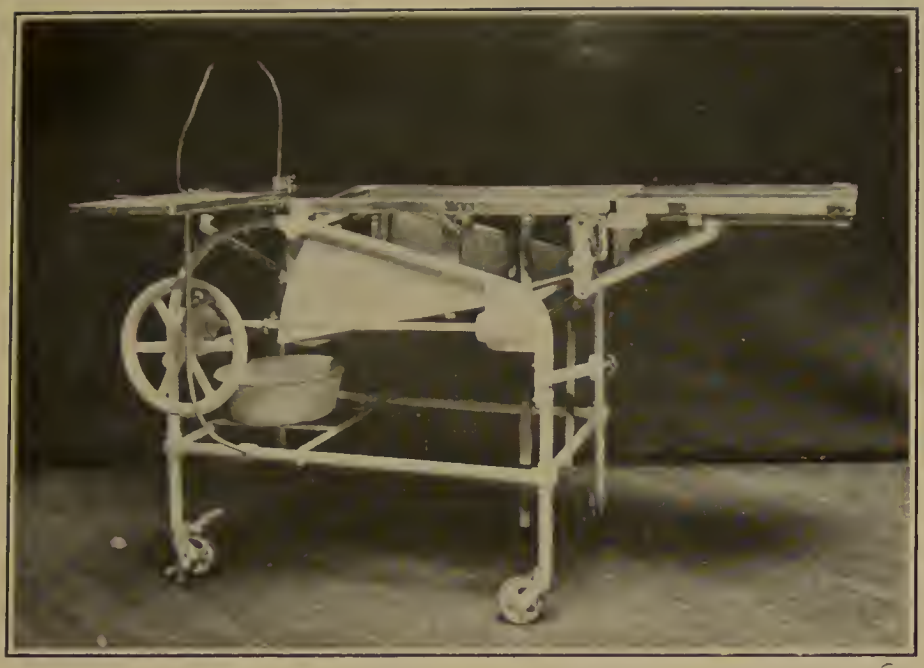

FIG. 2.—Bainbridge table, showing arm extension.

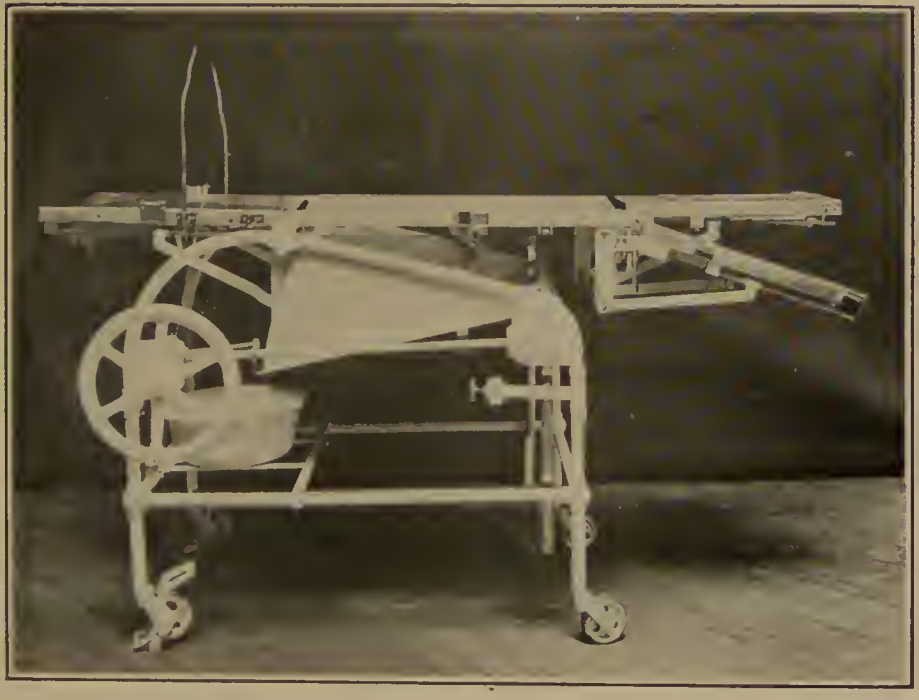

FIG. 3.—Bainbridge table, extended, showing foot end divided into two sections.

fortably done on this table; it has a universal range of position, from the extreme Trendelenburg to the reversed Trendelenburg; while its parts are many, it is easy of manipulation; there is no part of the table which cannot be easily cleansed, its smooth surfaces and absence of grooves being in keeping with the most modern hospital furniture construction.

Operating tables, like automobiles, embrace certain fundamental mechanical features common to all. The working out of these, and the assembling of the more important with the more minute details of construction, lead to as many combinations as there are mechanicians endeavoring to express, in operating table or automobile, what is conceived by the individual to be the most perfect for his needs. What seems to one inconsequent may seem to another important; each must choose for himself.

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